WILDLIFE MANAGEMENT AND RESEARCH NOTES

INDIANA DIVISION OF FISH&WILDLIFE

No.		DATE
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	TITLE: 2010 Waterfowl Population Surveys	

Abstract: *The peak number of ducks observed in Indiana's Weekly Waterfowl Inventory during fall and winter had consistently decreased since 1999, but seems to have leveled off in the last few years. Harvest has a stable to increasing trend. Due to flying and administrative problems, no estimates of breeding giant Canada geese* (Branta canadensis) *or ducks were made during the 2010 breeding season.*

History

The objective of this study was to provide annual spring population estimates, within ± 25%, of breeding Canada geese and ducks in Indiana, and to provide an annual index of fall and winter migratory waterfowl populations in Indiana. We use three different surveys for these purposes. The Weekly Waterfowl Inventory (WWI) is conducted in the fall and winter to track migration. The Spring Canada Goose Survey is an aerial survey to count breeding Canada geese in the state. Finally, the Spring Duck Survey is an aerial survey, conducted at the same time as the Canada Goose survey, to count breeding ducks.

Methods

2009-2010 Weekly Waterfowl Inventory. Waterfowl and other migratory wetland-associated birds are counted weekly from late August through late January on participating state fish and wildlife areas, reservoirs, national wildlife refuges and select private lands. Modes of transportation vary by property (i.e., automobile, boat, or walking), but all participants count all waterfowl seen on established routes. Participants conduct counts early in the week to avoid duplicate counting of the same birds at different areas.

2010 Spring Canada Goose Survey. Historically, this survey has been carried out by surveying 1 x 2 mi^2 plots from a helicopter. We changed to a fixed-wing, transect-based survey this year (see Discussion). Survey transects were planned in three strata. Each transect went east to west across the entire state (excluding urban areas). The first stratum, north of 41° latitude, had transects placed, from north to south, every five miles. The second stratum, south of 41° latitude to 39° 30', had transects every ten miles. The third stratum, south of 39° 30', had transects every fifteen miles. These surveys were

begun in early April. However, they were discontinued due to the inability of flying the aircraft low enough to count waterfowl. A contract is in place for spring 2011, hiring a private helicopter contractor to perform the flights so we can secure a reliable population estimate for the first time in three years.

2010 Spring Duck Survey. As a result of limited funding, this survey is typically conducted in conjunction with spring Canada goose surveys. These surveys normally occur in early- to mid-April, at a time when many ducks are beginning incubation. Unfortunately, this is also a time when there are usually migrant ducks still in the state. Duck counts are conducted within the same plots and methods as the spring Canada goose survey.

Results

2009-2010 Fall and Winter Survey. The spring was cold early and warmed up very quickly, as well as being quite rainy. The summer was relatively hot. The summer was also wet through mid-July, then dry through most of the autumn (mid-November). The breeding season was compressed, starting late but ending early, and seemed to be good to very good for production.

Weekly waterfowl counts were performed on state properties and national wildlife refuges, 24 August to 31 January. Most waterfowl counts decreased relative to 2008. Most also declined below their five-year averages (Table 1).

Overall dabbler counts are driven by mallard numbers in the state (Figures 1, 2). Mallards peaked the third week of December, two weeks earlier than 2008, but in line with the 2000-09 ten-year average (Figure 2). We saw one large peak in the South Zone that week, ahead of a massive cold front that froze the entire state solid. The peak mallard count was 17,732, down 27.5% from 2008 and down 17.1% from the 5-year average. Wood ducks peaked the first week of October, the same as 2008 and in line with other recent years (Figure 3). The peak wood duck count was 4,464, up 29% from 2008 and 3% from the 5-year average. The peak black duck count of 490 occurred during the first week of December, a week earlier than in 2008 (Figure 4). The number of black ducks decreased 59% from 2008, and was down 42% from the 5-year average. Green-winged teal peaked at 1,985, which was 102% higher than 2008 and 49% higher than the 5-year average. Green-winged teal peaked twice this year: once the last week of October (one week later than 2008) and again the last week of November. Blue-winged teal peaked during the second week of September, which was one week earlier than 2008. The peak count of blue-winged teal (544) was 45% lower than the 2008 peak count, and 42% lower than the 5-year average. The combined teal migration data are shown in Figure 5. Divers peaked during the first week of November at 1,346 birds, two weeks earlier than in 2008 (Figure 6). This was a 62% decrease from 2008, and 44% below the 5-year mean.

Canada goose migration through Indiana peaked at 31,666 observed birds the week of 14 January, two weeks earlier than 2008 and recent years (Figure 7). The South Zone experienced a two week spike (7-14 January) of 30,000+ birds, far and away the highest count since 2000-01. This was probably weather-related, as we seem to have had the

largest influx of wintering *B. c. interior* geese in recent memory. The statewide peak was 132% higher than 2008, and 106% above the 5-year average.

2010 Spring Canada Goose Survey. No estimate of breeding Canada goose populations was made this year (see Discussion).

2010 Spring Duck Survey. A serious attempt to estimate breeding mallard populations was intended this year. However, due to the problems described above regarding changing the protocol from helicopter to fixed-wing, the sample size was insufficient to produce mallard estimates. In addition, due to the altitude at which the surveys were flown, birds were difficult to detect and impossible to identify. Therefore, breeding duck estimates were not derived again this year.

Discussion and Recommendations

The peak numbers of waterfowl observed on the survey areas had been decreasing since the late 1990s, although peak duck counts have been stable since about 2003, depending on zone. This could be related to birds spending time off of traditionally surveyed areas (that is, spending more time on private land, such as power company cooling ponds, than on public lands containing good habitat). Because harvest has not decreased over the same period, it seems unlikely that we are actually seeing fewer birds pass through Indiana (Figures 8 and 9).

We continue operating under the assumption that the weekly waterfowl counts are a useful index to waterfowl migration: it seems unlikely that numbers and/or species peak at different times on surveyed properties than they do on other areas. The only time that the survey is problematic is when all surveyed areas are frozen but other areas are not. However, during these times, most waterfowlers are unable to hunt anyway, since open areas are likely on the rivers, which require specialized equipment. An evaluation of available waterfowl winter habitat on state-owned properties needs to occur. The possibility of conducting statewide waterfowl surveys should be considered, though it is likely that comprehensive statewide surveys would be prohibitively expensive.

In 2009, we had a great deal of difficulty scheduling flight time using the state helicopter. This difficulty, coupled with the high cost of helicopter flights, caused us to switch to straight-line transects from a fixed-wing aircraft. However, the pilot with whom we contracted was uncomfortable flying below 500 feet, an altitude at which we were unable to effectively identify and count waterfowl. This situation has been remedied for next spring by contracting with a private helicopter pilot and planning a return to the plot-based survey.

The urban surveys were attempted this year. Unfortunately, enough data were not collected to produce a reliable estimate. This is largely due to the waterfowl biologist being unavailable due to the birth of a child during the peak survey period. The urban survey will be reinstated next year, using the same methodologies as in 2009.

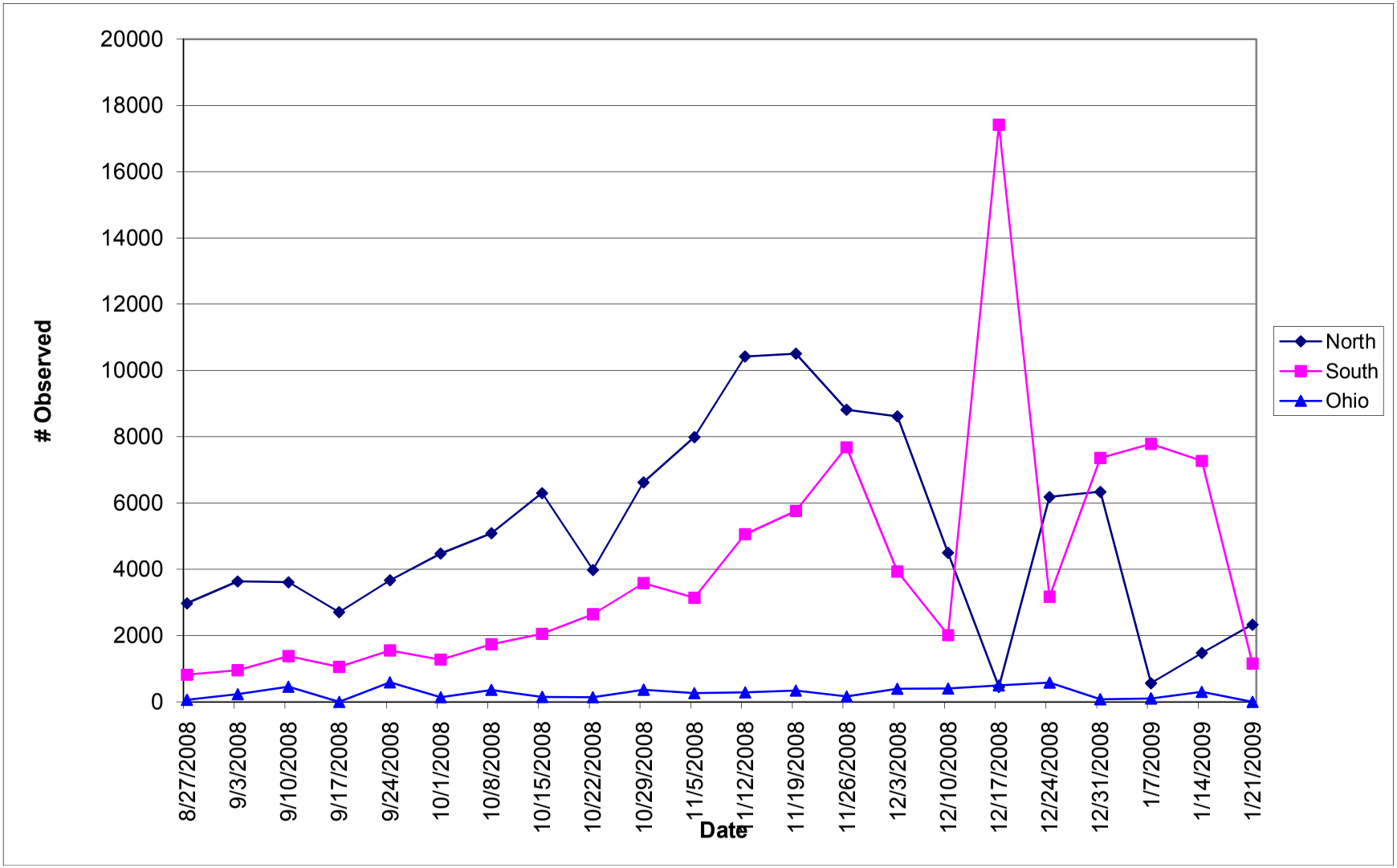

Figure 1. Migration timing of all dabbling ducks in Indiana by zone between 27 August 2009 and 21 January 2010.

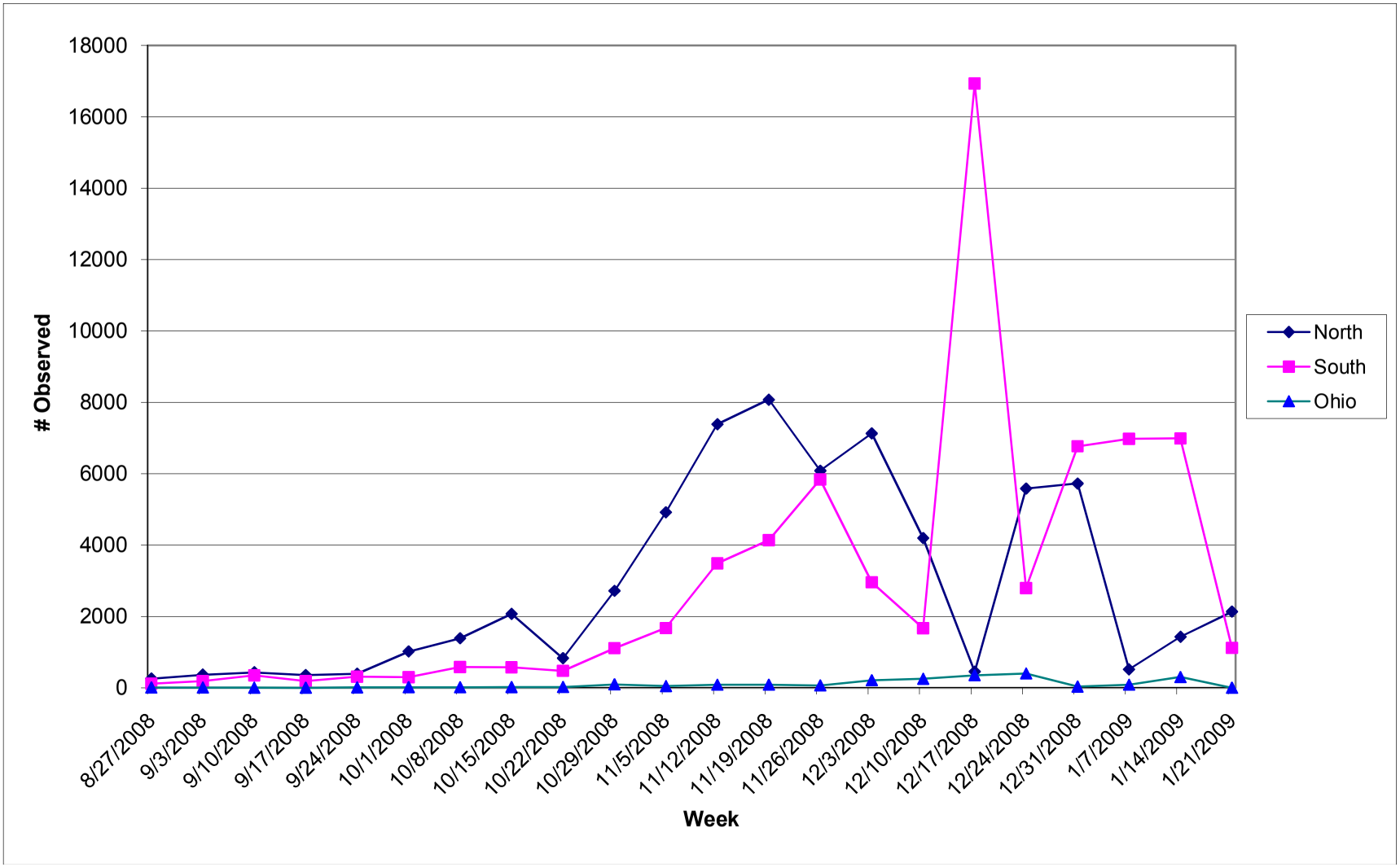

Figure 2. Migration timing of mallards in Indiana by zone between 27 August 2009 and 21 January 2010.

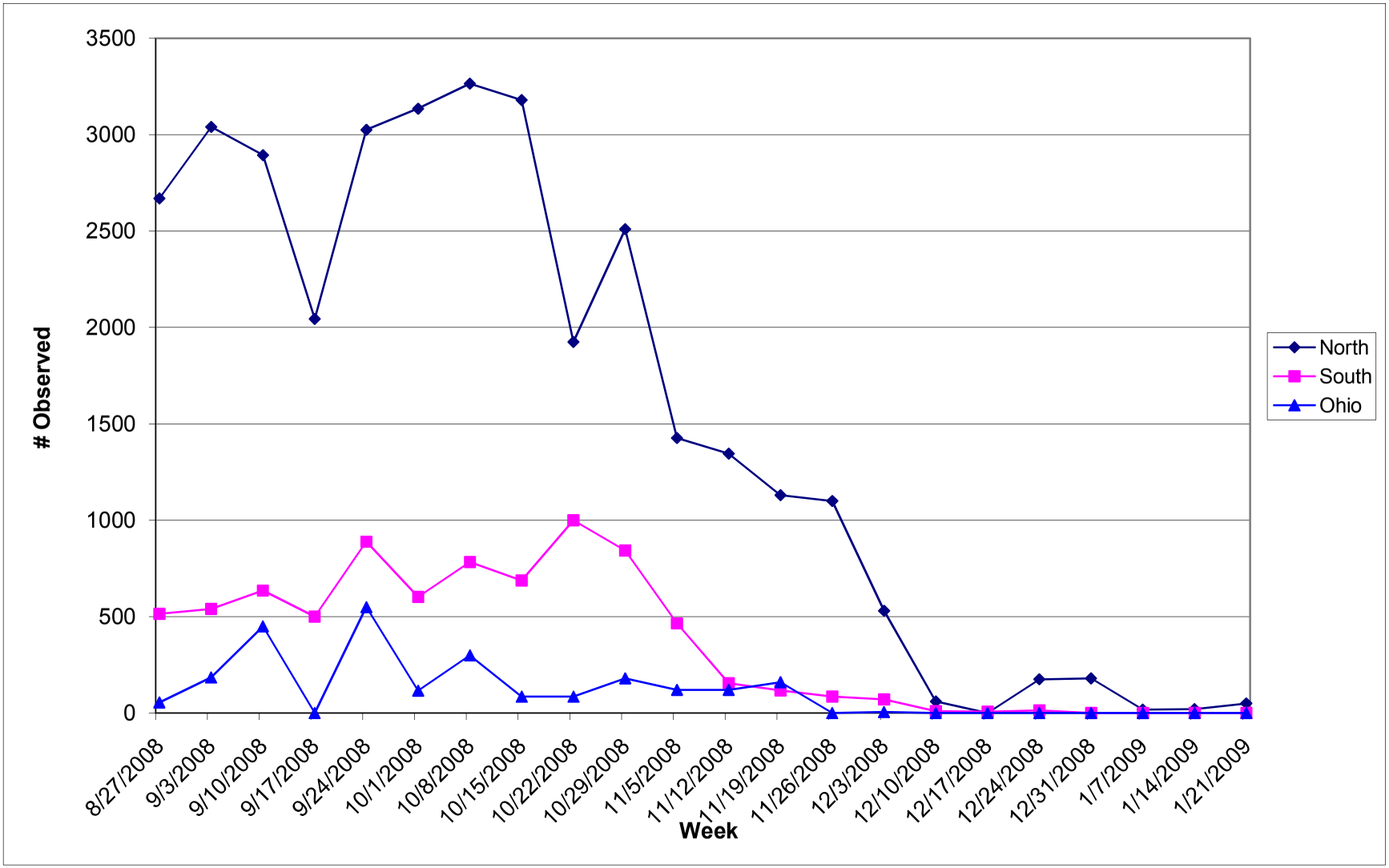

Figure 3. Migration timing of wood ducks in Indiana by zone between 27 August 2009 and 21 January 2010.

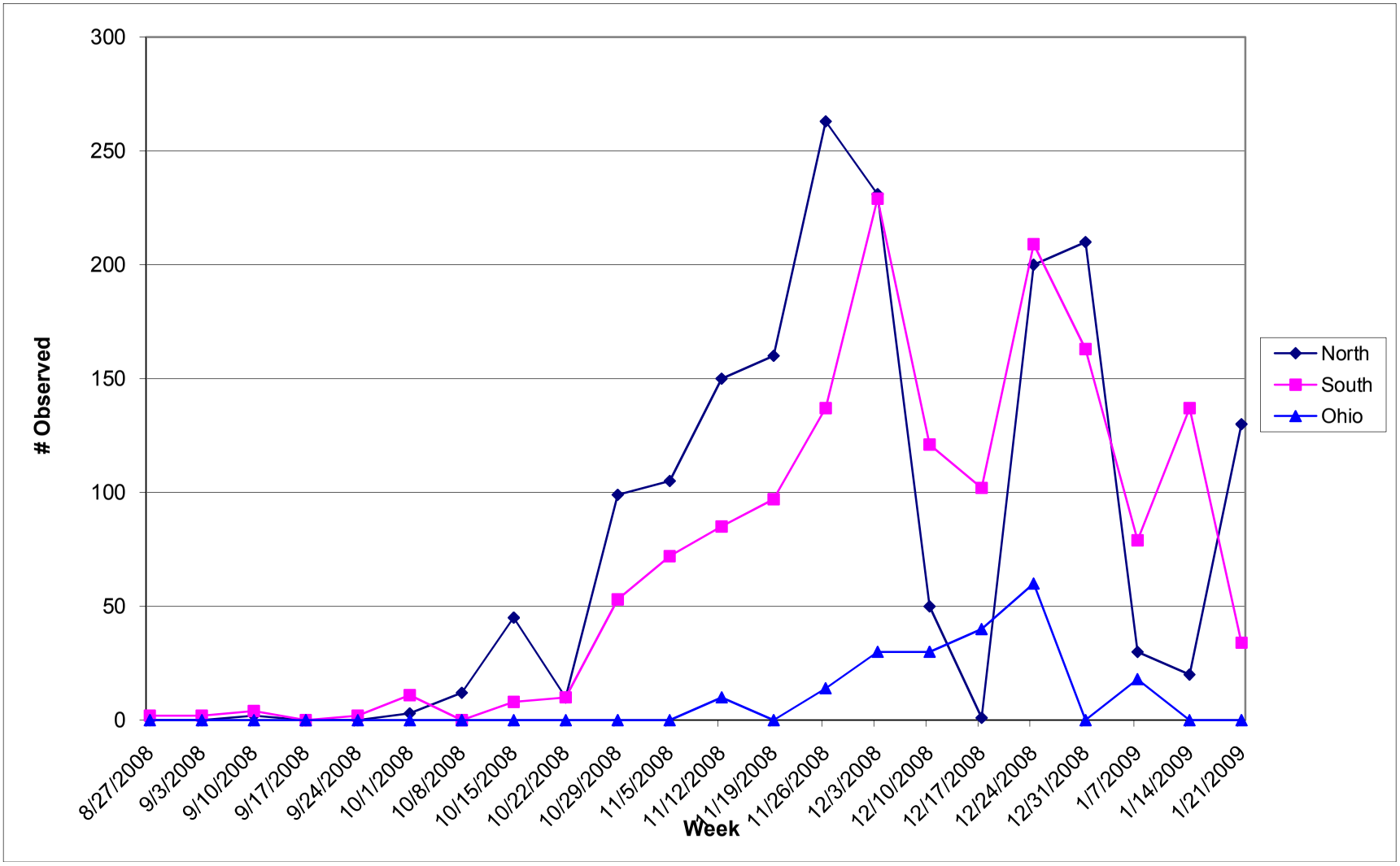

Figure 4. Migration timing of black ducks in Indiana by zone between 27 August 2009 and 21 January 2010.

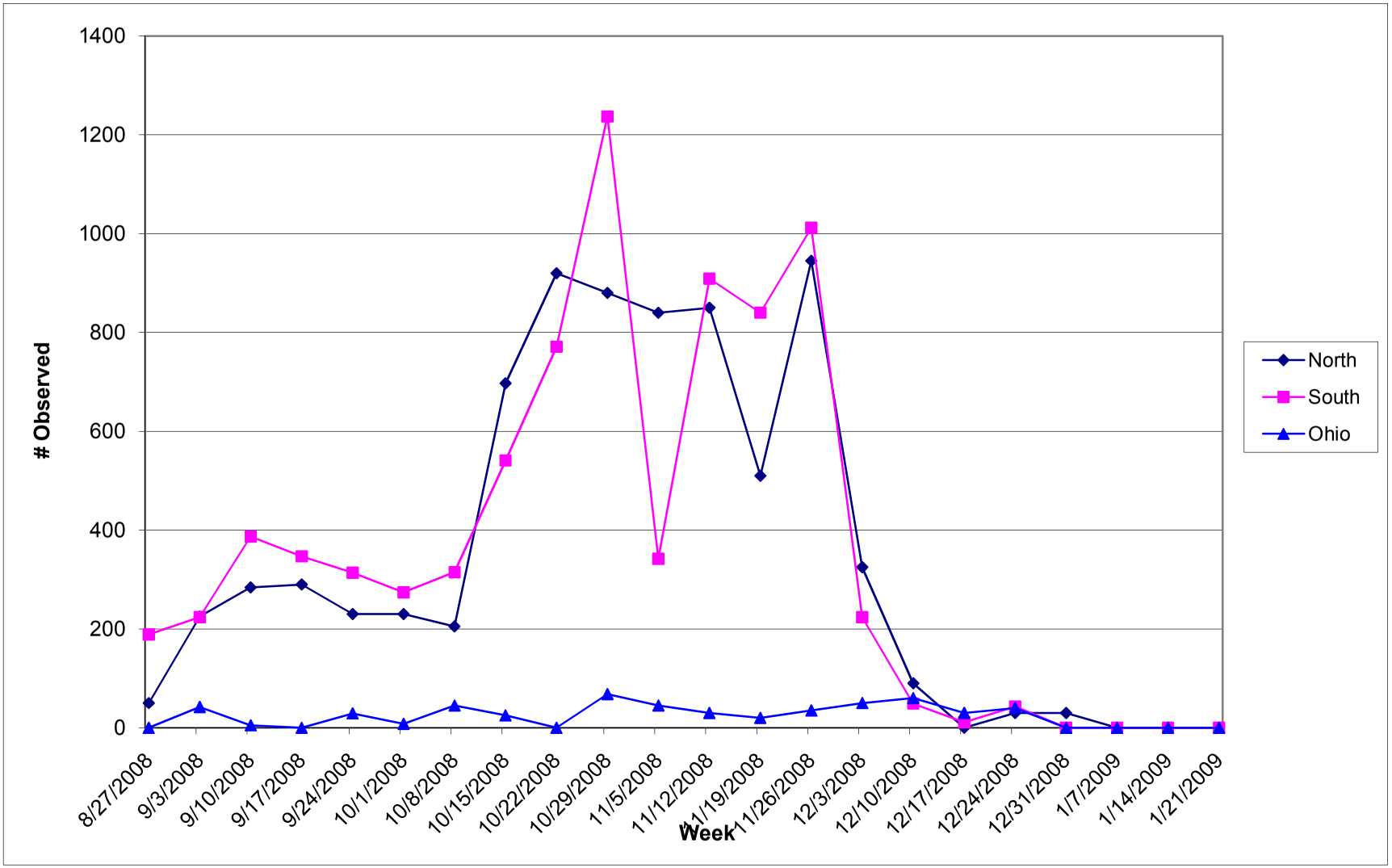

Figure 5. Migration timing of teal (both species) in Indiana between 27 August 2009 and 21 January 2010.

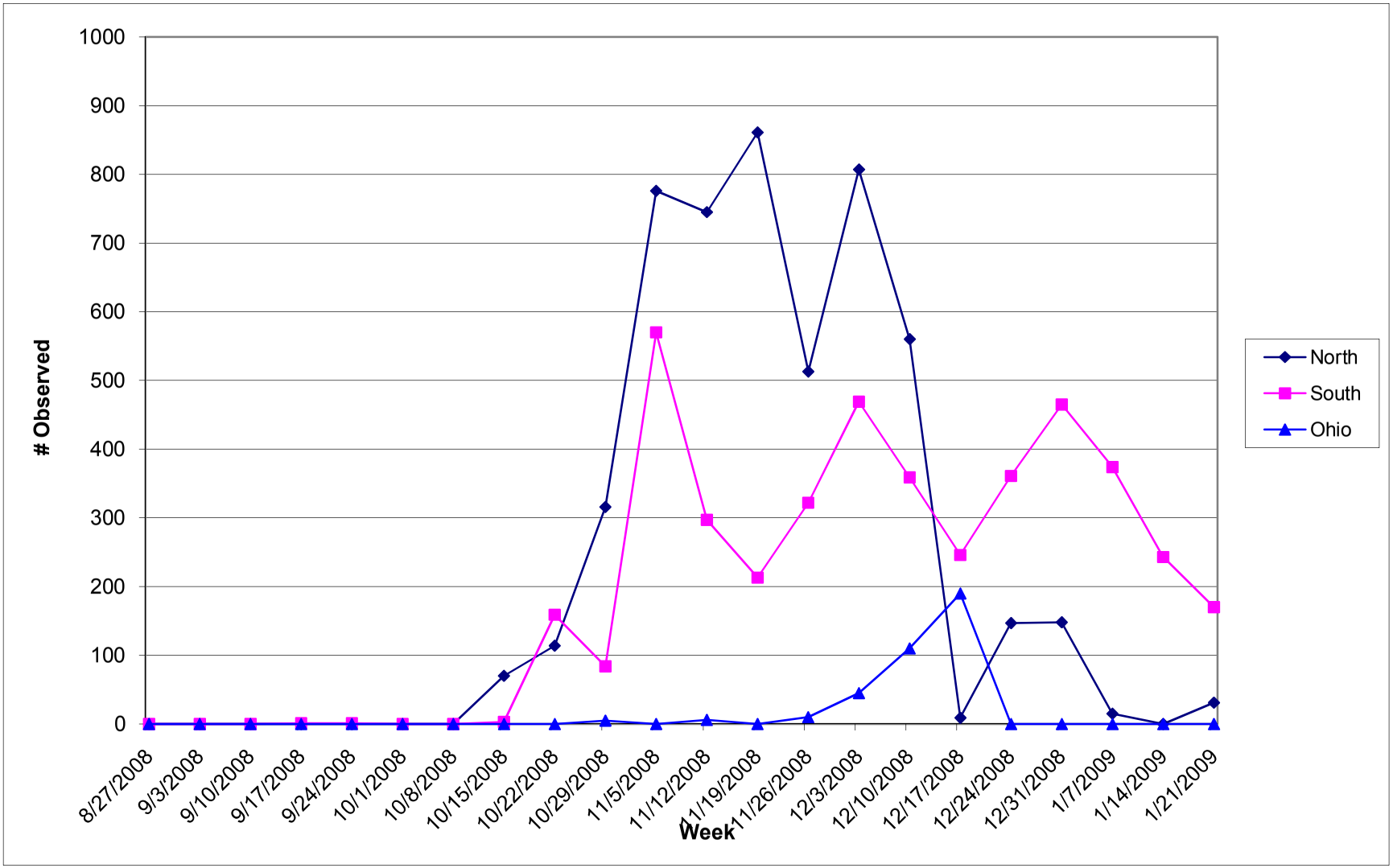

Figure 6. Migration timing of diving ducks in Indiana by zone between 27 August 2009 and 21 January 2010.

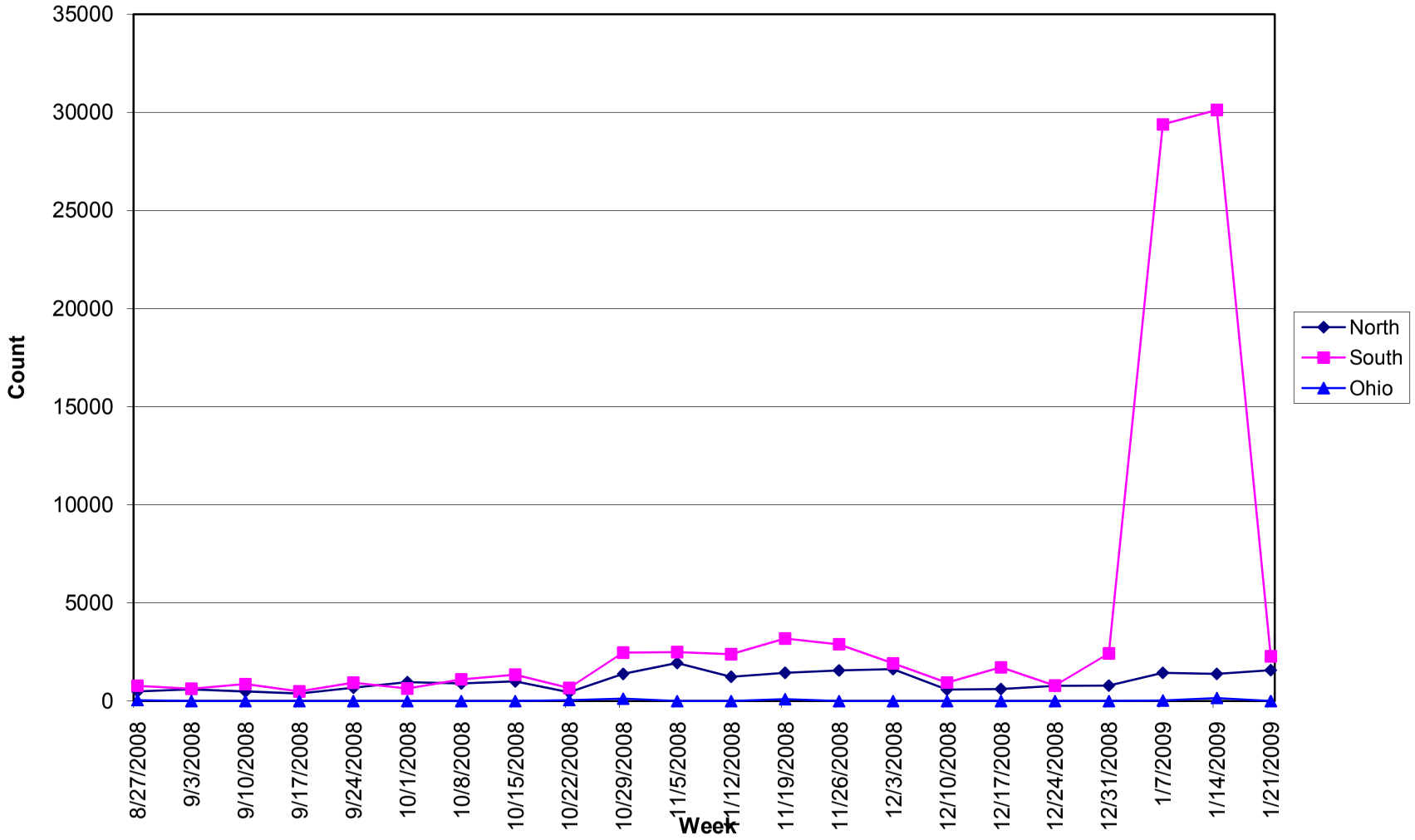

Figure 7. Migration timing of Canada geese in Indiana by zone between 27 August 2009 and 21 January 2010.

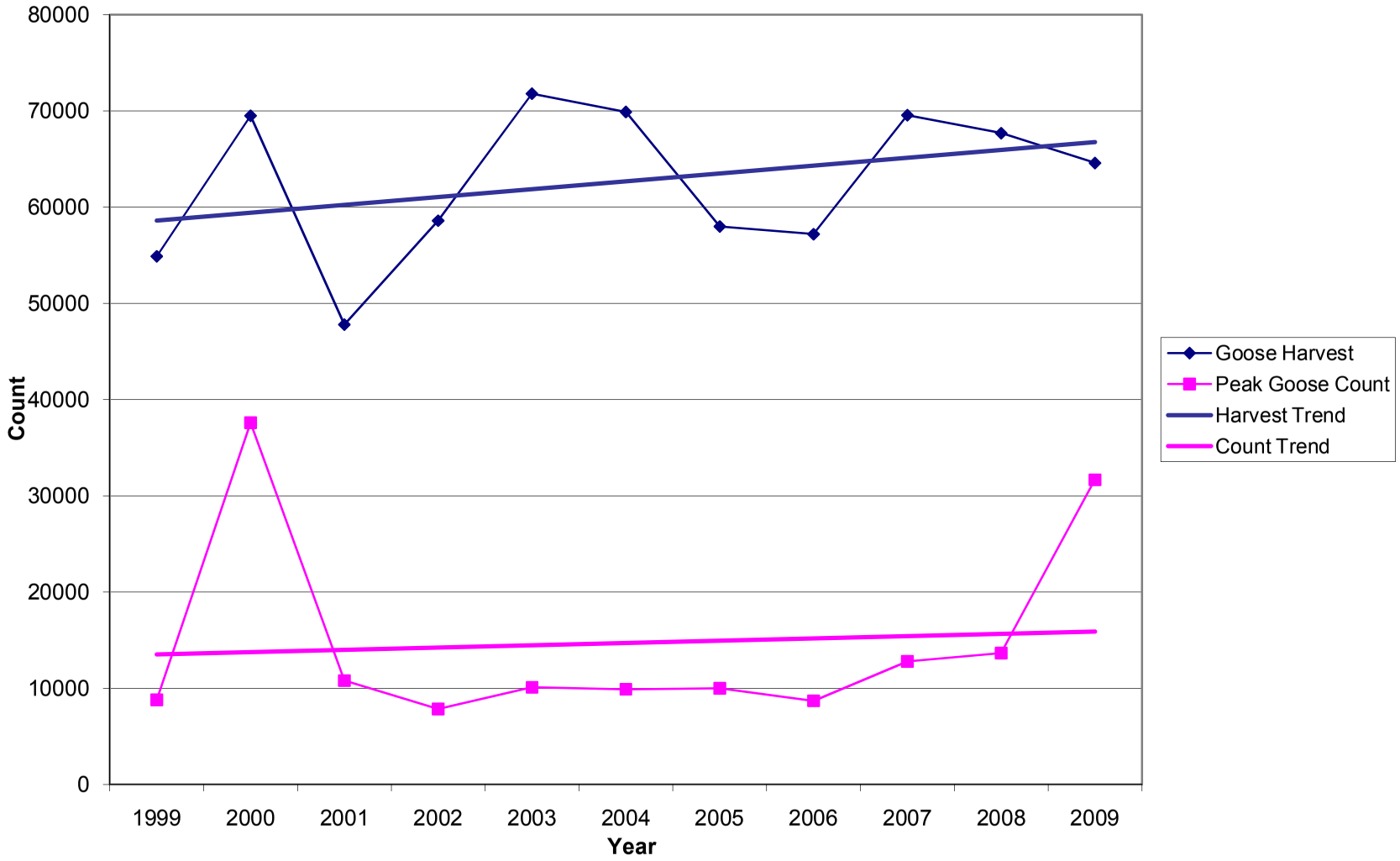

Figure 8. Canada goose harvest and peak survey count (statewide). Harvest is estimated from HIP. Notice that harvest continues to increase despite a stable total peak count during the survey. This likely indicates that many birds are not being counted.

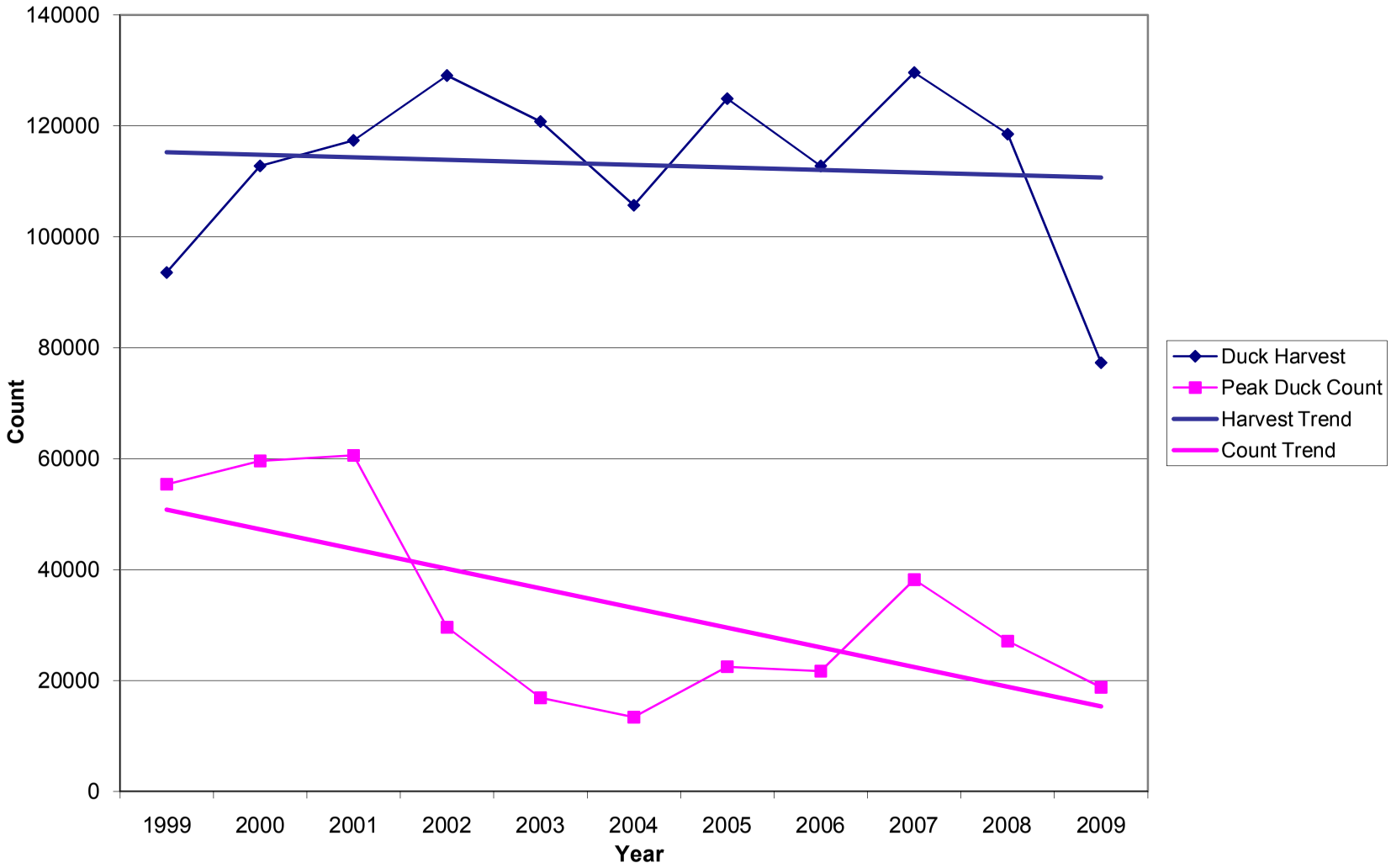

Figure 9. Total duck harvest and peak survey count (statewide). Harvest is estimated from HIP. Notice that harvest continues to increase despite a decrease in total peak count during the survey. This likely indicates that many birds are not being counted.

Table 1. Peak waterfowl migration counts on survey areas in Indiana from September through January, 2005-2009.

GROUP/SUBGROUP/SPECIES	2005-06	2006-07	2007-08	2008-09	2009-10	5 Year Avg	Dif 2008/2009	% Change	Dif from 5yr	% Change
ALL DABBLERS	22,443	20,718	31,486	26,472	18,360	23,896	-8,112	-30.6	-5,536	-23.2
MALLARDS	20,064	18,865	25,832	24,467	17,732	21,384	-6,735	-27.5	-3,652	-17.1
WOOD DUCK	3,489	4,810	5,406	3,461	4,464	4,326	+1,003	+29.0	+138	+3.2
BLACK DUCK	877	625	1,041	1,197	490	846	-707	-59.1	-356	-42.1
GREEN-WINGED TEAL	1,324	1,265	1,102	982	1,985	1,332	+1,003	+102	+653	+49.0
BLUE-WINGED TEAL	1,010	1,005	1,117	985	544	932	-441	-44.8	-388	-41.6
DIVERS AND MERGANSERS	2,349	2,568	2,180	3,534	1,346	2,395	-2,188	-61.9	-1,049	-43.8
CANADA GOOSE	10,039	8,664	12,789	13,659	31,666	15,363	+18,007	+132	+16,303	+106

Table 2. Estimates of total and breeding pairs of Canada geese in Indiana.

Year	Estimated Statewide Population	95% C.I.	Breeding Pairs	95% C.I.
2010	----NO ESTIMATE----			
2009 [1]	84,215	66,209 – 102,220	41,104	32,303 – 49,905
2008	102,700	70,850 – 135,500	49,131	33,900 – 64,360
2007	125,300	87,739 – 162,861	56,375	39,125 – 73,625
2006 [2]	175,900	87,277 – 264,163	49,907	10,928 – 88,886
2005	94,979	66,982 – 122,976	33,378	23,960 – 42,796
2004	80,200	50,777 – 109,623	30,839	Not available
2003	95,640	63,808 – 127,472	50,638	30,969 – 70,307
2002	----- NO SURVEY -----			
2001	121,052	72,212 – 169,892	53,391	35,102 – 71,680
2000	121,340	75,219 – 167,461	47,872	33,662 – 62,082
1999	88,966	54,824 – 123,108	37,807	24,490 – 51,124
1998	78,857	56,918 – 100,796	34,655	25,777 – 43,533
1997	87,633	75,555 – 99,711	37,591	32,013 – 43,169
1996	----- NO SURVEY -----			
1995	63,033	39,793 – 86,273	24,005	16,107 – 31,903
1994	69,650	46,350 – 92,950	11,900	6,550 – 17,250
1993	67,491	Not calculated	---	---

[1] The 2009 survey may reflect an underestimate. Few flight days resulted in a poor sample size, with most survey plots concentrated in low density areas.
[2] The 2006 survey likely overestimates statewide population, due to poor sample size.

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